# Homework 14 – Factorising

1. Factorise fully:
   (a) $y^2 + 5y$ (b) $4x^2 - 49$ (c) $5s^2 - 20$

2. Factorise:
   (a) $x^2 + 10x + 25$ (b) $x^2 - 10x - 24$ (c) $k^2 + 5k – 6$

3. Factorise:
   (a) $12a^2 + 7a - 12$ (b) $7w^2 - 2w - 9$ (c) $4x^2 - 11x + 6$

4. Factorise fully:
   (a) $12x^2 + 16x + 4$ (b) $3m^2 - 6m - 9$ (c) $3 - 3x - 36x^2$

5. Factorise fully:
   (a) $x^5 - 81x$ (b) $a^2 + 3ab + 2b^2$

6. (a) How many millilitres are there in 1 litre?
   There are $5 \times 10^9$ red blood cells in 1 millilitre of blood.
   The average person has 5.8 litres of blood.
   (b) How many red blood cells does the average person have in their blood?
   Give your answer in scientific notation.

7. A lorry leaves a depot at 0645 and travels at an average speed of 64 km/h to its destination 240 km away.
   At what time did the lorry reach its destination?

8. The speed of light is approximately $2.998 \times 10^5$ km/s. Light from the sun takes $8 \times 10^2$ seconds to reach a certain asteroid. How far is the asteroid from the sun?

9. An electrical goods warehouse charges a fixed price per item for goods delivered plus a fixed rate per mile.
   The total cost to a customer 40 miles from the warehouse for the delivery of 5 items was £30.
   A customer who lived 100 miles away paid £54 for the delivery of 2 items.
   Find the cost to a customer who bought 3 items and lives 70 miles away.

10. Solve for $x$
    (a) $50 + 6x = 26$
    (b) $3x + 13 = 9 - 5x$

11. Multiply out the brackets
    (a) $(2x – 7)(x + 5)$
    (b) $(t + 4)(t^2 – 5t + 6)$

12. Find the size of angle BAC in the triangle shown.
    Hint: Split it into two right angled triangles.